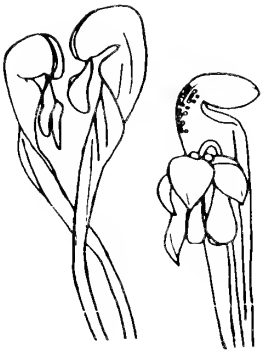
CARNIVOROUS PLANT NEWSLETTER

VOLUME 17, Number 2 JUNE 1988



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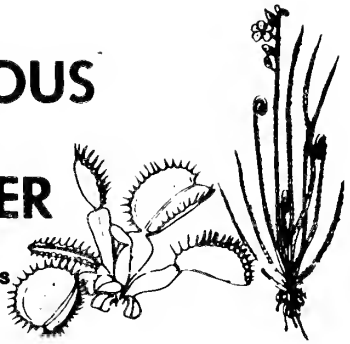
Official Journal of the International Carnivorous Plant Society



Volume 17, Number 2
June 1988

Front cover: *Heliamphora neblinae* plant with prominent red spoon. Note pitcher of *Nepenthes rajah* in background. See article beginning on page 47.
Rear cover: Flower of *H. neblinae*. Note size of flower as compared to hand! Photos by Thomas C. Gibson.

The co-editors of CPN would like everyone to pay particular attention to the following policies regarding your dues to the ICPS.

All correspondence regarding dues, address changes and missing issues should be sent to ICPS c/o Fullerton Arboretum, CSUF, Fullerton, CA 92634. DO NOT SEND TO THE CO-EDITORS. Checks for subscriptions and reprints should be made payable to ICPS.

All material for publication, comments and general correspondence about your plants, field trips or special noteworthy events relating to CP should be directed to one of the co-editors. We are interested in all news related to carnivorous plants and rely on the membership to supply us with this information so that we can share it with others.

Views expressed in this publication are those of the authors, not necessarily the editorial staff.

Copy deadline for the December 1988 issue is September 1, 1988.

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T.L. Mellichamp, CPN co-editor

It is with mixed feelings that I announce my resignation as co-editor of CPN. Business and family duties have begun to take priority. I have a 5 month old daughter, Suzanne, who needs to be taught how to grow CP, and I want to spend more time with her. I trust CPN subscribers will continue to increase their support for this very useful publication. I have seen some good improvements over the last 11 years and I know more are on the way. Good luck to you all and never stop caring.

International Carnivorous Plant Society

Seed Bank

April 30, 1988

Capsella bursa-pastoris (5)-non CP; *Byblis liniflora* (4); *Darlingtonia californica; Dionaea muscipula; Drosera aliciae* (5); *D. anglica* (2); *D. burkeana* (5); *D. capensis* (narrow leaf); *D. capillaris* (4); *D. communis* (1); *D. erythrorhiza; D. filiformis filiformis* (10); *D. gladuligera; D. indica* (5); *D. intermedia; D. intermedia* (Carolina giant) (10); *D. lovellae* (1); *D. montana* (1); *D. peltata* (2); *D. pulchella* (1); *D. rotundifolia* (10); *D. spathulata* (rotundate) (5); *D. stolonifera stolonifera* (10); *Pinguicula caerulea* (1); *P. lusitanica* (1); *P. vulgaris* (1); *Polypompholyx multifida* (10); *Sarracenia alata; S. leucophylla; S. minor* (5); *S. purpurea* (15); *S. rubra wherryi* (10); *S. alata* x *minor* (4); *S.* x *areolata; S.* x *catesbaei* (2); *S. flava* x *(alata* x *flava); S. rubra* x *oreo* (3); *Utricularia capensis* (2); *U. lateriflora* (5); *U. pentadactyla* (5); *U. subulata* (5); *U. uliginosa* (4); *U. violacea* (3).

Special Announcement

Group of East Coast members are planning a get together in the second weekend in July. The meeting is at a campground which is in the heart of the New Jersey Pine barens.

For Information please contact:

Jim Bakowski
42 Bently Street
Staten Island, New York 10307
Eves. (718) 967-4176

For the Record

The photos in the March, 1988 article "A Field Trip to Mendocino" by Peter D'Amato were taken by Chuck Powell.

Two spurious items were accidentally carried over from the December, 1987 issue. The first one appears below the captions on page 6 and the second on page 8 is *"Cephalotus* LABILL." and below *"C. follicularis* LABILL. W. Au." This occurred because the December issue was used as a template for the March 1988 issue and these items were not deleted.

Also regarding the December issue, the *Pinguicula* hybrid on the front cover is *P.* x 'weser' and not *P.* x *'sethos'.*

News and Views

WILLIAM BAUMGARTL (711 Holiday Dr. #12: Galveston, TX 77550: USA) writes: I would like to report the success I have had using shoot promoter in the rapid propagation of *Nepenthes* by cuttings. Using the *Nepenthes* Shoot Promoter (supplied by Mann's Orchids: 6400 Cedarbrook Dr., Pinellas Park, FL 33466; USA) applied to axillary buds, I have been able to quickly and safely generate numerous shoots from which I can make cuttings. The enclosed picture shows three such nodes which were induced to sprout using the paste. A small smear of the promoter paste is placed over an axillary bud, which is present just above most of the leaf insertions into the stem (nodes-ed.). The axillary bud will usually sprout within two to three weeks after the paste application. To date, I have had none of my plants show any ill effects from the paste. The paste is partially helpful for plants such as *N. x dyeriana* and some of the other larger, slower growing *Nepenthes* that are normally slow in producing side shoots for cuttings.

PETER D'AMATO (P.O. Box 1372, Guerneville, CA 95446 USA) writes: I would like to report that the Santa Rosa Garden Club's annual show, held on April 23, 1988 under the theme "A Portfolio of Flowers," not only recognized carnivorous plants as a legitimate competitive division of horticulture, but went out of their way to show enthusiasm for these plants in an unprecedented manner. It was a Standard Flower Show conforming to the objectives established by the National Council of State Garden Clubs, Inc. and judged by National Council accredited judges. Here in the land of Luther Burbank, the show is always diverse and quite interesting.

However, when I inquired as to entering CP, they did not quite know what to do with me, as there was no CP division. So I entered my plants under an "Other" category for potted plants. The maximum allowed to be displayed for competition in any division was 10 plants, so I entered that amount, plus two extras as "complementary" exhibits. The plants shown were *Sarracenia flava* x *purpurea, S. leucophylla* 'alba', *S. minor* 'Okee giant', *Drosera multifida* 'extrema', *D. peltata, D. capensis, Dionaea muscipula, Cephalotus f., Nepenthes ventricosa* 'red', *N. maxima,* and the two complimentary plants were with a California theme: the *grex D.* 'California Sunset' and *Pinguicula macroceras* 'nortensis'. As there was no division for these plants, I did not expect to be recognized in any way, aside from showing off these fine species and hybrids.

I was stunned when I went to pick up my plants. Not only had the judges added a category #97 just for my display, they broke their own rules and put a blue ribbon on every one of the ten plants entered for competition! It caused the biggest stir in the 18 year history of the show.

I would like to thank Mrs. Margaret Martin for her help and enthusiasm as chairperson of the show, and urge other north bay growers to join in the competition next spring.

Want Ads

Mr. R.B. Maharajh (94 Ainslie Ave; Hamilton ONT: CANADA L8S 2K2). (WBT) *Drosera spathulata* (Kanto); *D. schizandra; D. arcturi; D. trinervia* any variety; *D. cistiflora* any var.; *D. cunifolia; D. regia; D. hilaris; D. menziesii; D. binata multifida* "Extrema"; *P. lusitanica; P. longifolia; S. leucophylla* (red & white forms); *S. flava* (all red form); fresh seed of *Drosophyllum & B. liniflora.* (TS) *D. villosa; D. linearis; D. adelae; D. prolifera.* I would like to contact CP enthusiasts from around the world.

BETTY De LOSADA (428 Hill Street, San Francisco, CA 94114, USA, (415) 558-7962) writes: The San Francisco County Fair Flower Show would very much like to be included in your summer calendar of events:

When:	Friday, August 26, 1988 through Sunday, August 28, 1988 10:00 A.M. - 6:00 P.M. Preview Thursday, August 25, 1988 6:30 P.M. - 8:30 P.M.
Where:	San Francisco County Fair Building 9th Avenue and Lincoln Way Golden Gate Park
Admission:	$3.00 General, $2.00 Seniors Children under 12 free

The Flower Show is open to all amateur gardeners and non-commercial horticulturists in San Francisco and the nine Bay Area counties. It is the largest judged flower show in the West and the only County Fair devoted entirely to plants, cut blooms and flower arrangements.

Show Manager: LILLIAN LEE, (738 - 22nd Avenue, San Francisco, CA 94121n USA, (415) 221-5724)

JOE MAZRIMAS, CPN Co-editor reports: The first northern California CP meeting was held on Saturday, April 2, at Chuck Powell's house in Santa Clara where 22 CP people showed up to see 3 slide shows, traded and looked at plants and had a great time talking and enjoying a barbeque. Peter D'Amato gave a general talk on about 8 plants that he brought to this event, Chuck gave a nice talk on species of *Nepenthes* and I gave a split talk on *Pinguicula* and Bob Hanrahan's old CP nursery at Arroyo Grande in California. It was interesting to see Steve Kapa in the audience who helped Bob grow many of the plants he grew to sell.

All of us marveled at the plants especially *Drosera regia, Drosera pauciflora* and *Pinguicula filifolia,* a plant from a Cuban island. I'm sure we will see many more of these meetings in the future since all of us learned a great deal about CP by trading plants and information about them.

Some of the Northern California CP meeting attendees looking at the plant table. Photo by J.A. Mazrimas.

I have good news and that is: Adrian Slacks new book "Insect-eating Plants and How to Grow Them" is now available here in the U.S. The University of Washington Press, P.O. Box 50096, Seattle, Washington 98145 sells the book for $19.95. Add $2.00 for U.S. mail or $3.00 for UPS. The phone number: 800-441-4115 can be used for chargecards. There is a substantial discount for ordering multiple copies. Adrian's book is excellent on horticultural techniques and is full of good color photos of his own hybrids and species. I recommend this book for every CP grower.

ALEXANDER MRKVICKA (Hopflergasse 6/16/1/4, 1230 Wien, Austria) writes: You mentioned a "new" product (polymer of polyacrylamide - gel) for absorbing water in the cultivation-medium in CPN Vol. 16/N.3, Sept. 1987.

I have been growing all species of *Sarracenia,* also *Darlingtonia, Dionaea* and some species of *Drosera* in a mixture of the gel and peat 1:6 with great success for 7 years.

Besides absorbing water, the gel has two other advantages: When getting wet and dry the gel changes its size and helps in this way to loosen the soil. There are also insecticides and fungicides absorbed by the gel which is a great advantage in the parasite-control with my CP.

For growing *Sarracenia* and *Darlingtonia* I can recommend the gel to all cultivators!

DAVID H.T. WONG (311 East 51st Avenue, Vancouver, British Columbia V5X 1C6, Canada) writes: This is my first letter to our newsletter. I will really try to make an effort to become a regular contributor.

After receiving the CPN for the past five years, I can honestly say that I delight in all of the articles and photos. The publication gives a fascinating cross section of material and of the people involved in carnivorous plants. I especially enjoy the articles on new or novel plant cultural techniques and on the simple chit chat. It is with this chit chat in mind that I am sharing my experiences with you and other "carnivorphytophiles."

My interest in carnivorous plants takes me back to grade school where I first came face to face with a Venus fly trap. It was not until a decade later, in high school, that I finally purchased myself several *Dionaea, Sarracenia* and *Drosera.* Unfortunately I always had terrible luck with them since they almost invariably all died within months. Despite all the care and attention I gave these plants, they would never survive for more than a year. Since these plants were never available locally, I had to go through the mail order route. And so the ritual continued on.

From my early experiences, I have come up with several basic rules, so that new hobbyists can avoid the mistakes I made. They are:

1. Always use the proper planting media.
2. Gradually accustom the plants to light,
3. Seal the top of the container (terrarium) with a cover to keep the humidity high,
4. Give the required dormancy period to those plants that require it, and,
5. Remove diseased/rotted foliage, particularly old flower stalks.

Although these five rules sound simplistic, I believe that many new would-be growers would be less apprehensive and be more successful with carnivorous plants (CP). With many years of growing CP I am sure that some of us take the relative ease of growing these plants for granted, so sometimes, we should remind ourselves of why the plants are doing so well.

I have been growing CP's for the past fifteen years, and in all that time I have met and read of very few Canadian collectors. I hope this letter will awaken other Canadian hobbyists so that we may write to one another and exchange plants and seeds, especially in light of the new restrictions placed upon the international exchange of certain species.

My interests in plants do not only involve just CP, but also South American cacti- *Gymnocalycium, Lobivia, Notocactus* and *Rebutia,* but these are a different story. My first love will always be CP's. The succulents have at times had to share a greenhouse with my CP's. Talk about extremes in habitat conditions!

My greatest satisfaction in CP's is the starting of plants from seeds. To watch these plants grow into the beautiful flowering adults really gives me a true sense of satisfaction. I especially enjoy watching the babies grow alongside the parents and grandparents.

My technique for growing CP's from seed is the "Baggies" technique. The following method works well with *Sarracenia* and *Dionaea.* It is a little more difficult with some of the finer seed specimens, such as *Drosera.*

First, to rid my seeds of any potential fungi, the seeds are soaked in a weak solution of potassium permangante (two small crystals per litre of water), soak for six hours; prepare a sowing medium of peat moss, washed sharp sand, charcoal, washed chicken grit, and existing planting medium (for a pinch of existing living organisms) in a mixture of 6:3:1:1:1. This medium is placed into a container then is soaked with the remaining solution. I then drop the moist seeds onto the surface of this medium, label the container, then enclose it in a clear plastic bag. The bag is then tied tightly enclosing the existing air volume within it, or blow into the bag to "balloon" it up. If the seeds require stratification, I would place the baggie in my refrigerator for eight weeks. If no stratification were required, these baggies should be left in an area that receives approximately 60% filtered sunlight (whenever we get it here in Vancouver).

I would check on the progress of these seeds once a week to see if any fungus has attacked my seeds. If there were fungi, I would open the bag to air it and mist it with a fungicide (eg. Benomyl). But so far, I have been quite fortunate to have very little fungal problems. For *Drosera,* I don't bother with soaking them in the potassium permanganate solution. Instead, I gently mist the solution on after the seeds have been dusted atop the planting media, then, it is bagged up. After germination, all seedlings would remain in the plastic bag for the next five months. This seedling medium is also the same one I use to grow my mature specimens of *Sarracenia, Drosera* and *Dionaea.*

Although I have had wonderful successes with my baggie technique, I would like to caution people to experiment first on material that can be sacrificed using any new technique or chemical treatment, especially that in the realm of pest control. Despite their wonderful abilities, CP's do fall victim to pests. My problem was that of sowbugs. These insects chewed tiny holes at the bases of many of my pitcher plants, and made gourmet meals out of their roots. Although my plants thrived, the sight of these bugs were irritating. So being the lazy person that I am, I quickly turned to an insecticidal soap (referred to in a past issue of the CPN Vol. 14 No. 2). To my horror, all my treated *Sarracenia, Darlingtonia,* and *Cephalotus* died within three weeks. Although this insecticidal soap works wonders on my cacti, it definitely is a NO for CP's. I therefore, would like to reiterate the concern in a follow up CPN letter Vol. 14, No. 4 that the use of insecticidal soap was detrimental to certain CP's.

S. alata with fly in throat.

N. alata. Photos by D. Wong.

Another sorrowful experience for me was the leaving of my collection with detailed instructions in the hands of an inappreciative (or irresponsible) person. In 1984 I embarked on a one year studies abroad program, and while backpacking through China I received the most dreadful news any CPer could hear... all my CP had died. I couldn't believe it until I returned back home to see my once beautiful collection reduced to a dessicated, wispy mass. I felt like feeding my younger brother (the inept caretaker) to a man-eating CP, but lucky for him these man-eaters don't exist. So lesson number three, share your collection with other CPers so that you may recover lost specimens through future reciprocated cuttings, and who knows, this person may look after your collection while you are off exploring the world.

It is with that humbling experience that I believe in trading plants instead of hoarding them. Oh well... I can still be comforted with some of the photos from my ex-collection. Another thing, when taking photos, I find it especially helpful that some sort of scale indicator be placed next to the subject, be it a coin, a camera cap, or even a hand.

Well I am off to a new start, and over the past two years my collection has been slowly but patiently growing. I've enclosed two slides for CPN to use - one slide shows *A. alata* with a fly crawling down its throat, the other slide shows a *N. alata*. The *S. alata* is grown outdoors in the summer, while the *N. alata* is grown indoors in my greenhouse window box.

Literature Review

CENTRE FOR LIFE STUDIES (no author), 1985. Carnivorous plants. Centre for Life Studies (Zoological Gardens, Regent's Park, London NW1 4RY), 57 p. (/1.00 UK, $2.50 US ppd surface elsewhere).

For some reason we had not run across this little booklet before, and we are glad we did. Considering the limitation of size and its intent as a school educational tool, it has a lot of well-written and accurate information in it, if one is ready to excuse a very few oversimplifications. The booklet is very well illustrated by excellent line drawings and covers CP worldwide in terms of all genera, trap functions, etc. A good part of the book is given over to excellent methods of propagation and a thorough discussion of horticulture and cultivation with an eye to economy. The book concludes with a long list of sources, not only legally for plants in the UK, but also supplies other educational materials including slides, books and VCR tapes. DES

IIJIMA, T. and S. HAGIWARA. Voltage-dependent potassium channels in protoplasts of trap-lobe cells of *Dionaea muscipula*. J. Membr. Biol. 100(1): 73-82 1987.

Using the patch-clamp technique, the outward rectification of the potassium ion current in mesophyll cell protoplasts from the trap lobes of *Dionaea* was studied. The rectification depends on the membrane voltage and the concentration of intracellular potassium ion. Excised patches and intact membrane showed activities.

KARLSSON, P.S., K.O. NORDELL, S. EIREFELT and A. SVENSSON. Trapping efficiency of three carnivorous *Pinguicula* spp. Oecologia (Berl) 73(4): 518-521 1987.

The authors tested 3 species: *P. alpina, P. villosa* and *P. vulgaris* in regard to trapping prey and comparing them to artificial traps in northern Sweden. *P. vulgaris* trapped the most insects - about 21-37 ug per cm per day while the other two species trapped half that number, a value equal to that of sticky green paper plant leaves. Mostly, the prey were mosquitoes, gnats, craneflies and springtails.

RIZZACASA, M.A. and M.V. SARGENT. The structure and synthesis of nepenthone A, a naphthoquinone from *Nepenthes rafflesiana*. J. Chem. Soc. Perkin Trans. 10(9): 2017-2017 1987.

The authors isolated this naphthoquinone pigment, determined its structure and synthesized it to confirm that it was identical to the natural product.

Continuous Growth of Tuberous *Drosera*?

By R.D. Tilbrooke
c/o Poste Restante GPO, Adelaide, S.A. 5000, Australia

A seed germinates, producing a seedling that grows, develops and matures into a plant capable of producing its own progeny that may, if conditions are favourable, continue the cycle. Inherent in our thoughts is the fact that all four processes usually occur in the same location. Consequently plants have adapted to avoid environmental stresses such as flood and drought. Seeds are the common method, used by plants to outstay harsh conditions. However the time required for a seedling to reach maturity is very often prohibitive, especially if conditions occur regularly ie. annually. Under such conditions bulbs, corms and tubers play an integral role in the maintenance of the species. The last entity, the tuber, is associated with many Australian ***Drosera*** and is used solely to classify inclusion into the subgenus ***ergalium*** (Marchant et. al. 1981).

A tuber is really a compressed vegetative axis, deposited prior to and during partial senescence; a process whereby the plant translocates above-ground reserves to the roots and/or other storage organs. The plant while present in the soil as a tuber, is regarded as being in a state of dormancy. The breaking of this dormancy is induced by a return to favourable conditions. It should, therefore, in theory be possible to break dormancy when required, to cessate future tuber production by maintenance of favourable growing conditions and to initiate tuber production only when it is most convenient or required.

D. peltata in continuous growth. Note shoots of various ages.

Close up view of base of plant. Eight shoots have been produced so far. Photos by author.

Everyone has heard at some stage of their life the saying "Nature is the mother of invention." This proverb is very apt for the general lack of tuberous ***Drosera*** at the last two A.C.P.S's annual shows prompted me to investigate any method that might delay or retain growth until the show held in mid-December, two to three months after most of the species have gone dormant! I have since then experimented and have made a number of observations that I feel will, not only help members in Australia, but also enlighten overseas members who are having great difficulty retarding the departure of newly acquired "bulbs." The experiments were all made on the common South Australian *Drosera,* ***Drosera peltata*** Smith.

By keeping the soil permanently moist, dormancy was shortened; which led to the formation of shoots in January some two months earlier than usual!

Upon emergence of the apical meristem (shoot) above the soil it was observed that retention of high moisture and low light levels, combined to prolong the duration of the characteristic basal rosette and reduce the internodal distance between subsequent aerially produced leaves; such that flowering occurred at approximately six centimeters from the soil surface. It was also noted that the leaf shape changed from petiolate to reniform to peltate in a very gradual manner — more so than in the wild type.

Fully grown plants held under moderately low light conditions (lower than normal, but not low enough to conflict with normal ascension of the axis), and maintained with a moist soil, began and are still producing new shoots which are characteristically *devoid* of a basal rosette! Slides included with this article show evidence of eight shoots having come from one plant.

It is hoped, this year, the technique will be refined and extended to other Rainbow Sundews and that an attempt on a rosette species will be made.

REFERENCES: DROSERACEAE, N.G. Marchant, H.J. Aston & A.S. George, FLORA OF AUSTRALIA Vol. 8, Pg 9-68 (set Vols. 1-49).

Want Ads

Matthew Hochberg (5500 Fieldstron Road, Riverdale, New York 10471; USA). (W,T,B) Plants, seeds or cuttings of the following: Any *Genlisea* species other than *hispidula* and *violacea); Heliamphora tatei* or new species; *Drosera affinis; D. arenicola; D. bequaertii; D. capillaris* var. *braziliensis; D. cayennensis; D. dendeensis; D. chiapasensis; D. colombiana; D. communis; D. compacta; D. elongata; D. esmeraldae; D. felix; D. humbertii; D. insolita; D. kaieteurensis; D. katangensis; D. meristocaulis; D. neocaledonica; D. oblanceolata; D. panamensis; D. petiolaris* (and related species); *D. pilosa; D. pusilla; D. ramentacea; D. roraimae; D. sessilifolia; D. uniflora;* New *Drosera* species; Cuban *Pinguicula* species; South American *Pinguicula* species; cultural information on the above plants various other CP. (T) *Drosera intermedia* (Mount Roraima); South American species of *Drosera* and *Utricularia* for the above; *Drosera spathulata* and others for anything I do not have.

Randy Lamb (5030 E. Hastings St. #106: Burnaby BC: CANADA V5B 1P6). (W) *Drosera linearis, D.* x *obovata; Cephalotus; P. primuliflora; S. flava; S. minor.* (TS) *D. anglica; D. capensis; D. rotundifolia; D. spathulata; U. vulgaris; P. macroceras;* live *Sphagnum.* I especially would like to hear from Canadian growers.

Chas. Powell (2138 Harrison St., Santa Clara, CA 95050) (Trade or sell) Rooted cuttings: *Nepenthes alata, N. ventrata,* and various other species and hybrids in limited supply; *Pinguicula* x *weser, P. esseriana,* and various other species and hybrids in limited supply. (Want, trade or buy) *Drosera petiolaris, D. graminifolia, D. piloa, D. schizandra,* any *Genlisea; Pinguicula crenatiloba, P. cyclosecta, P. imitatrix, P. kondoi, P. ramosa.*

Cites, Traffic, USFW — Are You Caught in the Alphabet Soup?

by Donald Schnell
(Rt. 1, Box 145C, Pulaski, VA 24301)

In our June, 1987 issue of CPN, we published proposed pages for a CITES inspection manual that covered some Sarracenias, and on P. 42 we also mentioned in a single sentence that USFW was considering placing all Sarracenias on Appendix II of CITES.

Well, what does that all mean? In this very brief article, I hope to succinctly review what all those initials are about and where we seem to stand with some CP. Some of this may seem hard to follow on first scan since several of the agencies seem to be in a race with one another and yet appear to be cooperating in other aspects. And then you will see that some things can go one way, but not another, and on and on.

THE PLAYERS—On the assumption that one must be somewhat conversant in the tongue of all that is going on, here is the list of organizations and their initials—We will see what they do later on:

CITES—Convention on Internationsl Trade in Endangered Species of Wild Fauna and Flora.

WWF—World Wildlife Fund.

TRAFFIC—Trade Records Analysis of Flora and Fauna In Commerce.

IUCNNR—International Union for Conservation of Nature and Natural Resources.

USFW or FWS—U.S. Fish and Wildlife Service, Fish and Wildlife Service. (FWS seems preferred by the folks in Washington.)

ESA—Endangered Species Act, passed by US Congress.

The key letters of the names of the organizations that go to make up the abbreviations, sometimes pronounceable acronyms, are in bold type.

THE SCENARIO—For all practical purposes as far as positive achievements go, it all started with the IUCNNR which had its main impetus in Europe and which may still be active although I rarely see it mentioned except in some books of European origin (most recently in 1984, Briggs and Walters, *Plant Variation and Evolution* out of Cambridge). However, a low key but well- endowed conservation organization, the WWF—Usually appended with the country's chapter, such as WWF-U.S.—established TRAFFIC (Also often appended, eg TRAFFIC (U.S.A.) to cooperate with the IUCNNR to monitor commercial trade in threatened or endangered species. Since then, CITES was established and TRAFFIC and the WWF efforts seem most directed to it. Meanwhile, and parallel at least partially with all this, the United States Congress passed the Endangered Species Act (ESA). The former organizations worked mostly with international trade, while the latter Act was mainly domestic and perhaps more broad in outlook in that the intent was to establish any degree of danger to a species and encourage its conservation by direct methods if possible as well as trade regulation interstate.

So, in essence today, we have CITES with help from WWF and its TRAFFIC program on the international scene, and the US Threatened and Endangered Species Act on the domestic scene. The latter is administered under the auspices of the FWS, which in turn is under the Department of the Interior. Now, FWS provides considerable interaction and cooperation with CITES, but the inspection process at US ports of entry is under control of the Department of Agriculture! So far, all is familiar in Washington.

CITES is kind of a biological United Nations — There are approximately 87 countries cooperating with the Convention and it has a ruling Secretariat. At called Convention meetings, decisions are made to place plants in one of several categories. These are called Appendices, Appendix I being those plants now considered threatened with extinction if unlimited trade is allowed, and Appendix II being those plants not now necessarily threatened but which could become so. Essentially, to engage in **international** (note emphasis) trade in these listed species, one must include with the recipient nation's required sanitation certificate and any import permit, a special permit by the exporting government authority that trade of that shipment of plants will not threaten wild populations. The hope is that this would most commonly be due to their having been propagated or collected from developing areas under monitoring and permits.

Presently, three US CP are on the list, all Appendix I: *S. oreophila, S. alabamensis* ssp. *alabamensis* and *S. jonesii* (The latter two also known as *S. rubra* ssp. *alabamensis* and *S. rubra* ssp. *jonesii* respectively). Other CP around the world include *Cephalotus, Nepenthes rajah,* and a few other *Nepenthes* spp. On Jan. 12, 1987, I received a letter from FWS stating that TRAFFIC (No longer just a monitoring service of WWF, apparently!) had recommended placing "...most species and natural hybrids of *Sarracenia...*" in Appendix II (not I), and requested comments, the letter signed by Charles W. Dane, Chief, Office of Scientific Authority. To date, this is still a proposal being discussed, and if accepted, they must decide which species and hybrids be placed on Appendix II. One other note from the CITES scene—I received a letter dated 19 June 1987 from FWS along with a memo describing a loophole in the CITES rules (Ah, politics!) allowing a commercial shipper to obtain only one permit for a particular species under CITES to be shipped to anyone and to make useable copies rather than having to obtain separate permits for each shipment, thus alleviating some stress for commercial dealers.

In the US and **interstate** (note emphasis) control, the Act has had its ups and downs, sometimes moving with alacrity, at others with a yawn. The problems are several. The T & E Species Office of FWS must first scrap for funding from Congress each session or even each year. This has varied considerably. Secondly, with limited scientific staff and an understandably conservative approach, the Office must first prove a species threatened and/or endangered by the numbers, then propose it in the Congressional Record, and from there—Ah, politics! So far, *S. oreophila* among our CP has been the only one to make it although various Sarracenias are being studied. Still, many other non- CP species in dire straits have been successfully proposed, and the Office is to be given credit.

What this boils down to, as of this moment at writing, is that considering local and/or State conservation, theft and trespass laws, you may not ship *S. oreophila* interstate or internationally without a special permit. However, you may ship the two S. rubras interstate, but not internationally without the CITES approved permit. The same goes for CP spp. of other nations in turn. By the way, the Convention and Act also pertains to plant parts, such as leaves, rhizomes, seed, etc.

What follows is personal comment—I hope this clarifies the issue to some degree for you. I have used a minimum of dates and abbreviated history somewhat so it could be followed. As of this writing (July, 1987), the above seem to be the facts, but the CITES/TRAFFIC action on "most" Sarracenias and their hybrids is being considered and may be passed as you read this. The T&E Office may have achieved more success. My personal opinion is that both the US national and CITES/TRAFFIC international efforts are commendable and should be seriously considered by all sensitive CP enthusiasts. But, I do wish all organizations concerned would get their act together into a somewhat more unified effort that would provide clarity of intent and action. For instance, are these "most" Sarracenias and hybrids truly fitted for Appendix II, or is it simply a matter of making it easier on ports of entry inspectors? The latter should not be too readily denied since this was the purpose of placing the entire family Orchidaceae on the CITES list several years ago, and world renowned

orchid authorities howled and rightfully are still howling. As we (humanity collectively) destroy an area of tropical forest daily equal to a small State, orchids and bromeliads and other desirable plants dry in the sun and die rather than be exported to growers in other countries.

A second request and wish I have is that somehow an effort be made to eliminate politics and power-plays for funding and a key place in the control circus. To deny that these problems exist is futile—All of us CPN'ers around the world know that when a government bureaucracy or any large organization of even a private nature come into the picture, power politics and competition for limited funding inevitably come up. I think the plants, the various scientists and officials of these organizations, and us, would all be better served by a more open and concerted effort in practice, not just in word.

If nothing else now, I can expect a flood of indignant letters, brochures, pamphlets, etc. from officials of these various organizations—And that is to the good! The more information of a certain nature we can get, or total "information" to weed through and look for truth, the better they and we will be served. I will share it with you. By the way, for the record, I have approached at least two dozen officials in all these organizations for CPN articles. All I received were "somedays" and "Too busy right now" or no comment at all, thus passing up an important CP information outlet—CPN—to get their point across. That is not good PR, ladies and gentlemen!

Changes in Regulations Effecting International Trade in Carnivorous Plants

Sabina Knees
and
Martin Cheek
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Far reaching changes in the international laws governing world trade in carnivorous plants became effective worldwide on the 22 October 1987. These changes follow a recent meeting of the Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora held in Ottawa, Canada during July 1987. CITES is concerned with the conservation of wildlife and is best known for effectively banning international trade in leopard skins, ivory and crocodile products. However CITES also concerns plants, especially orchids, cacti, other succulents and many carnivorous plants. The most endangered species are listed on Appendix I and world trade in wild collected plants and their derivatives on this list is totally prohibited. Those species considered threatened but not in immediate danger of extinction are listed on Appendix II. Species on this list may be traded but only if accompanied by the appropriate documents. The standard CITES licence which is issued by all member states party to the Convention requires information on the numbers and names of species requested, whether the plants are wild or artificially propagated and the intended use by the importer or exporter. Use categories include trade, personal, scientific or educational purposes.

All licences are issued by Management Authorities in the countries of origin and a selected list of these is given in Table 1. Under the CITES Convention many member states also appoint Scientific Authorities who give further advice to the Management Authorities on the biology of the species on the Appendices. In the United Kingdom the Scientific Authority for plants is the Royal Botanic Gardens, Kew. CITES is enforced in the UK by

Her Majesty's Customs & Excise who are first to see specimens when they enter the country. The licenses are processed by Customs & Excise before forwarding to the Department of the Environment. Any infringement of CITES regulations is usually policed by Customs & Excise in conjunction with the Wildlife Inspectorate of the Department of the Environment.

This article explains how and why changes to the carnivorous plants listed on the Appendices were made by CITES in 1987 and shows the revisions to the Appendices. The biennial meeting of CITES parties is the one occasion when biologists and administrators concerned with the operation of CITES get together to discuss problems that have arisen since the last conference. These include many subject areas such as infractions by one or more states, new species to be considered under the various committees for listing on the Appendices, Annual Trade Reports and the formulation of resolutions which will enable the Convention to operate more smoothly. Two of these subject areas involved discussions of direct relevance to carnivorous plant specialists; one being a revised resolution concerning the treatment of artificially propagated hybrids and the other new carnivorous plant species being listed on Appendix I.

In all cases any issues of relevance to plants are first screened by the Plant Working Group, who discuss the subjects at great length. Indeed at the recent meeting discussions on one proposal alone lasted for five days. The Group is formed on an *ad hoc* basis and comprises botanists and growers of international repute as well as representatives of both governmental and non-governmental organizations. Any person or organization who has been accredited by the CITES Secretariat may attend sessions of the Plant Working Group. Having passed scrutiny at this specialist level the subject is then raised in the relevant committee when all member states have an opportunity to speak on the subject with the facility to vote if contentious or unresolved points arise. Having passed the committee state the decision is usually endorsed during the plenary session at the end of the conference.

Over 700 delegates from more than 80 countries attended this meeting. The decisions taken at Ottawa will take effect both nationally and internationally within 90 days of the end of the conference, which will be the 22 October 1987. However for all countries in the European Community changes will take effect on publication in the Official Journal of the European Communities, since CITES is implemented in the UK and the rest of the Community by a Commission Regulation.

Changes in Regulations

At its third meeting in Lausanne in 1986, the Plant Working Group decided that regulations affecting trade in artificially propagated hybrids of Appendix I species could be simplified without placing wild populations of these plants at greater risk. Having refined their ideas, a Resolution was drawn up and passed at the Ottawa meeting and henceforth all artificially propagated hybrids from Appendix I species will be treated in the same way as all other carnivorous plant hybrids offered in international trade. This means that plants will only require a certificate of artificial propagation rather than an import or export licence. However countries in which the Appendix I species grow reserve the right to place their own restrictions on these plants if they feel that wild populations are being inadvertently threatened by this approach.

Please see **CHANGES** *on page 51*

On the Cultivation of the South American Pitcherplant, *Heliamphora neblinae.*

By Thomas C. Gibson, Dept. of Botany
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In a remote region of southern Venezuela, there is a lofty mountain which is perpetually hidden in the mists. Appropriately named Cerro de la Neblina ("Mountain of the Clouds"), it supports large expanses of carnivorous plant bogs. Here grows the spectacular South American pitcherplant, *Heliamphora neblinae* with robust crimson traps (see front cover; also back cover of CPN *8*(3), 1979).

Various helicopter expeditions have come to this remote mountain to study its unusual flora, which is one of the most intriguing in the world (see Smithsonian Magazine 1985). During one of these trips, a curious researcher, unknown to me, collected some pitcher plants.... perhaps he even grabbed them as he hurriedly returned to the helicopter.... and from this event a chunk of leafless, bare rhizome reached me. I am most grateful to the intermediate friend who relayed this piece of treasure to me.

From this simple beginning, I now have a magnificent and graceful plant (Figure 1), nearly as robust and colorful as those in nature. In mid-November 1987 this plant threw a vigorous spike with 2 splendid flowers (Figure 2). The "petals" are delicate white with a faint rose blush and emit a fine perfume. I suspect they are pollinated by moths at dusk in the bogs.

I now describe how I grow this plant, so that those who obtain their own plants in the future might learn more from my methods.

Greenhouse conditions in Madison, Wisconsin.

I try to simulate natural environmental conditions in the bogs on Cerro de la Neblina based on my knowledge of high tropical mountains. To me, the quintessence is bright sun in drifting mist, spring-like days, and cool nights. In the greenhouse, these conditions are similar to those under which orchid growers raise *Cymbidiums:* 70-75° F during the day and 50° F at night. This plant grows best in late summer with even colder nights (45° F).

I pot this plant in 80% pure peat moss with 20% perlite. I've used pure peat moss with no adverse effects. I water only with distilled water. When the plant flowers, I let the soil dry out so as to reduce the risk of its rotting when not in growth (and therefore not needing so much water).

The plant readily captures a species of Marsh Fly, which is abundant in my growing area. These are quite similar to its natural prey ("Zucudos,"). Each trap fills with the rotting bodies of 80-150 flies. I keep water levels high in traps, so that digestion continues.

Readers who wish to learn more details of how I grow high elevation carnivorous plants might see my article, "On the Cultivation of the Giant Malaysian Pitcher Plant, *Nepenthes rajah* CPN 12(4): (1983). My plant of *H. neblinae* grows in the middle of my *Nepenthes* collection.

For readers who wish to own a plant of this species, I am trying to propagate my single plant, mostly from seed. This is a slow process. At this time, I will only trade stock for equally rare *Heliamphora* and *Nepenthes* species. In several years, as more people grow this plant, it may become more readily available.

Editor's note: Figure 1 is the front cover and Figure 2 is the back cover.

A Practical Method for Cultivation of *Heliamphora* spp.

Cliff Dodd, (2225 S. Atlantic Ave.,Daytona Beach, FL 32018) &
Charles Powell (2138 Harrison St., Santa Clara, CA 95050)

After several years of cultivating CP, *Nepenthes* in particular, one of us (C.D.) traded a *Nepenthes fusca* for a *Heliamphora heterodoxa* and began the task of cultivation of the genus in Central Florida, a habitat vastly different from the Venezuelan tepuis the plants call home. Over the years several methods were employed to try and grow *Heliamphora* but generally with poor results. These methods included:

1. An old refrigerator which was modified by cutting a large hole in the door and siliconing in two layers of plexiglas over the hole, leaving a dead air space for insulation. Fluorescent lights (plant lights) were mounted on the inside separate from the ballasts which were mounted outside the unit to prevent heat build-up. Due to the limitations of the unit this kept the plants too cool (45 degs. F.) resulting in almost no growth over a six month period.
2. Under greenhouse cultivation at ambient temperatures in Florida and California the plants were badly stressed to the point where they were easily lost during transplant or division. Even though in Florida they were placed in front of a cooling pad (swamp cooler) the temperatures in summer were in the low 90's. F.
3. An ice cream freezer was equipped with a new thermostat, plexiglas top, and bank of fluorescent lights. This worked fairly well and the plants did fair, but I (Cliff) was trying to run a day/night temperature cycle for highland *Nepenthes* which grow under different environmental conditions. In any case the humidity and drying rates were too hard to control.

Finally a good friend, Bruce Sutton, talked me into trying a much simpler method based on the facts that these plants only need a relatively constant set of conditions and no special refrigeration. They *do* need cooling but only in the range where someone is comfortable without perspiring in a household setting, no warmer than 80-82° F. in summer and 65-70° F. in winter with nighttime temperature 5-10° F. cooler.

The method:

Take for example, a 30 gallon aquarium and set about 6 or 8 inverted 2″ flower pots or cross sections of PVC pipe in the bottom. On top of this set a layer of the plastic "egg crate" fluorescent light diffuser used with drop ceilings (it is usually white and forms a grid of 1/2 inch squares). This is set atop the inverted pots and should fit exactly the inside dimensions of the aquarium. It can be cut easily with a saber saw. Next, lay down a layer of plastic window screening over the grid to prevent particles of moss from falling into the water that will fill the bottom of the tank. In place of the grid a layer of an inert rock (pumice or quartz) can be used to set the potted plants on. Pumice will absorb water and release it slowly as vapor and is relatively cheap. The advantages of plastic is that it can be daily cleaned whereas the rocks would have to be discarded. The purpose of the grid suspended over the bottom of the tank is that when the plants are watered all excess water drains into this reservoir preventing suffocation of the roots and less rapid breakdown of the moss. The reservoir below the grid also maintains a very high humidity at all times. When the water level reaches the bottom of the grid it can be siphoned off using a length of aquarium tubing slipped through the grid at the corner of the tank or pushed into the rocks.

At this point you will have to start thinking about containers for the plants. The size will depend on the size of the specimens, ultimate size of the species, and size of the aquarium used. We use plastic 4.5″ square and 6″ round pots with extra large drainage holes cut into two sides of the pot for aeration and extra drainage.

N. lowii juvenile pitcher. Note hairs under lid.

Close up of lid of *N. macfarlaneii.* Photos by Cliff Dodd.

Heliamphora growing atop a 30 gallon aquarium. Beginning with the large plant at one end and going towards the opposite end *H. tatei* var. *neblinae,* a small *H. heterodoxa,* two *H. nutans* in flower, *H. minor,* and *H. sp.* from Ilu-tepui.

Now you *must* pressure-cook, or boil some sphagnum to sterilize it. I feel this is a necessity since otherwise you will get ferns and weeds in the terrarium and they will be a constant nuisance later, competing for light and nutrients with the *Heliamphora.* Once the moss has cooled, carefully pot the plant and add any green moss (clean live *Sphagnum* tops from other containers) as a topping to start a moss "culture." If any live moss is left over it can be placed around the outside of the pots up to the rim to hide the containers and keep the humidity high. Be very careful when transplanting these plants as the roots are very delicate and easily broken. Pitchers, or groups of pitchers which break off when potting or dividing, should also be potted up. Quite recently Charles Powell learned that pitchers accidentally broken off during division will root and produce plants if they are cleanly pulled from the rhizome and placed in live sphagnum. His success with one species led me (Cliff) to try a second species and we are happy to report it works well. As other species mature we plan to try all of them. This could be one of the fastest ways to produce a large number of plants, especially in those species that may not produce offsets freely.

The newly potted plants are then placed on the screen and plastic grid or gravel. The plants could be planted in a bed of moss over the grid, but this would make it difficult to remove the plants for division or to remove old, dead leaves. Also, the roots could enter the water below the grid and possibly rot, where this is unlikely in a pot.

Finally, a full glass or clear acrylic cover forms the lid of the tank. In lieu of this, clear plastic wrap can be used and will seal to the edges of the tank if moistened. An advantage of the plastic is that it can be replaced when it becomes dirty and is less dangerous around children and hobbyists.

For lighting we use 2 or 4, 4′ wide spectrum fluorescent lights. Although I have seen good plants from cool whites and from plant lights, the lumen output of plant lights is quite low requiring many bulbs that raise temperature levels above optimum. The lights must be kept high enough above the tank so as not heat the terrarium beyond 82° F and can be suspended or set on top of a spacer allowing air flow between the cover glass and the lights. Full spectrum bulbs are best but they can be expensive. However, once the tank is set up there is little expense and virtually no maintenance. A timer set for a 16 hr. photoperiod seems to work well and produces good color in the pitchers.

Should heat build up become a problem an air stone can be placed in the water below the grid and connected to a small aquarium air pump. Placing the pump near the floor will pick up cool air, humidify it and force warm air out any small air leaks at the top of the tank. Because of splashing from the air stone it should not be placed directly under a plant.

Because of the high humidity and constant environmental conditions the plants only need watering every two weeks to two months when the moss begins to dry out. A dilute solution of Peter's 20-20-20 (1/4 teaspoon or less per gal.) may be poured into the pitchers every few months with good results, however, it does tend to damage the live sphagnum and the sphagnum should be flushed with pure water between fertilizations.

The success of this method is amazing. I (Cliff) was given three plants, 2 *minor* and 1 *nutans,* that had been neglected, due to the unfortunate death of the grower who was boarding them. They were loaded with pill-bugs, millipedes, and snails and only had two damaged leaves on each of the plants. After clean up and repotting them there was little hope of their survival, especially since the transplanting was done in summer. However, they lived through the first few weeks and began putting out about one leaf a month. Within a year and a half these sickly plants were dividable and produced 3 *H. nutans* and over a dozen of *H. minor* have been produced. A small 1″ tall seedling of *H. heterodoxa* has also been grown using this method and after one year is producing 4 inch sub-adult pitchers. To date *H. nutans* and *minor* have both flowered.

While not perfect (we would prefer to grow them at 65° F year round) it has been a very successful and practical method and has produced beautiful plants. The ease of cultivation with this method makes growing these rare carnivores easy and rewarding. Good growing!

CHANGES *continued from page 46*

This resolution currently applies to *Sarracenia alabamensis* var. *alabamensis, S. jonesii* and *S. oreophila* since all these species are permanently listed on Appendix I of the Convention. *Nepenthes rajah* is also on Appendix I but not normally involved in hybridization. One more species of carnivorous plant was also considered for uplisting at the Ottawa Conference, namely *Nepenthes khasiana* following a proposal from the Government of India and any hybridization involving this species would now be subject to the same regulations as those already listed.

Table 1

Management Authorities under the CITES Convention — a selected list

Australia	Australian National Parks & Wildlife Service, P.O. Box 636, CANBERRA A.C.T. 2601.
Federal Republic of Germany	Bundesministerium fur Umwelt, Naturschutz und Reaktorisicherheit, Abteilung Naturschutz, Referat 623, Postfach 140270, D-5300 BONN 1.
Japan	Ministry of International Trade & Industry, International Economic Affairs Division, International Economic Affairs Department, International Trade Policy Bureau, 3-1, Kasumi-ga-seki 1-chome, Chiyoda-ku, TOKYO.
United Kingdom	Department of the Environment, Tollgate House, Houlton Street, BRISTOL. BS2 9DJ
U.S.A.	Fish and Wildlife Service, Department of the Interior, Room 527, Matomic Building, 1717 H Street, N.W., WASHINGTON, D.C. 20240.

Imports into the U.K. may also need a Phytosanitary Certificate and this may be obtained through the Ministry of Agriculture, Fisheries and Food, Plant Health Division, Great Westminster House, Horseferry Road, London SW1.

In addition to this proposal the Malaysian Government also formulated a proposal to include all species of *Nepenthes* not already listed on Appendix I, on Appendix II. This was also adopted although the Plant Working Group recognized that many species are very common in some parts of their range. However in order for CITES to work effectively it must be possible to identify plants in the form in which they are normally traded and for *Nepenthes* it would not always be possible to distinguish one species from another but it may be possible to identify a plant or plant part belonging to that genus. Appendix II listing does not aim to prevent trade but merely to monitor it under licence.

A third proposal relating to carnivorous plants was put forward by the USA to include all species of *Sarracenia* not already listed on Appendix I, on Appendix II. This was also approved by the Plant Working Group and adopted by the Conference of Parties. Table 2 shows the status of all carnivorous plants now listed on the Appendices of the Convention.

Table 2

Current status of carnivorous plants listed on the Appendices of CITES

Family	Appendix I	Appendix II
BYBLIDACEAE		Byblis spp.
CEPHALOTACEAE		Cephalotus follicularis
NEPENTHACEAE	Nepenthes rajah	All Nepenthes spp.
	Nepenthes khasiana	not already on Appendix I
SARRACENIACEAE	Sarracenia alabamensis	All Sarracenia spp.
	var. alabamensis	not already on Appendix I
	S. jonesii	
	S. oreophila	Darlingtonia californica

Assessment of Natural CP Populations by a Commercial Grower

By Bob Hanrahan
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The following article is one in which I have considered writing for a number of years. It is not due to the difficulty in preparing an article for CPN, but in the subject matter. Back in the early 1970's, I initiated a strong conservation based policy in developing World Insectivorous Plants (WIP) and making its objectives based on commercial production of CP. My concerns for plant conservation were based on printed accounts that I had read on how the plants were being removed from their natural ancestral homelands by commercial companies (so-called field collectors) at an astronomical rate rapidly depleting them from the wild to the point of near extinction. I was horrified with the thought of commercial CP companies going out into the field and ripping plants out and stuffing them into a bag for resale. It did not seem ethical. It still isn't if the land is not owned, leased or the owner compensated for the change in the plant life. To get a firsthand look at the situation and to improve my understanding of CP populations, I made an extensive tour of the southeastern coastal areas of Mississippi to North Carolina in 1975.

When I first visited this CP belt, I was impressed with the quantity of plants in the field. Especially impressive was the Green Swamp in North Carolina. Even with all of the reported "rapes" by commercial companies, carnivores were easy to find along the roadways and in the natural forest areas. Having conversed with many of the "field collectors," they mentioned that there were so many plants in the Green Swamp that it would be decades before they would get scarce. They practiced a limited conservation program by taking only

the larger plants thus enabling seedlings to develop. They scattered seed when it was available. The fallacy of this is that since only mature plants are able to flower and set seed, their removal eliminates future seed production. Then something happened in Green Swamp. The timber companies began to expand their pine plantations.

Almost overnight, the CP populations were annihilated. The only thing green about the "green swamp" today is the color of the trees and the money coming in from their sale. It was the bulldozers that did in the CP's, not the collectors. Now don't get me wrong, I am not expousing the virtues of field collecting for profit, but I would like to point out that habitat destruction is by far the greater evil when comparing collecting to land transformation.

During the 1970's, pressure was put on companies who purchased or removed the majority of their plants from natural habitats to grow their own stock. In that the majority of these field collecting companies have since gone out of business, WIP and Sundew Environments were constantly expousing the benefits of buying greenhouse grown plants of which we more or less had a monopoly. Besides the obvious advantages of pest free and controlled plants, our selections were not limited to the plants in the field. To compete, we had to produce and sell plants at prices competitive with field pulled material. With the novelty of CP, coupled with the superb magazines available then *(House Plants and Porch Gardens, Plants Alive,* etc.) which touted CP, sales were brisk and they enabled a business to succeed. With the general decline in interest in houseplants in the late 1970's and continuing into the 80's, Sundew ceased operations. WIP continued on, mainly due to the efforts of WIP employees Ron Fleming and Jim Miller in getting *Nepenthes* into wide circulation. My specialty, high volume production techniques and systems development were hampered by the many moves that transpired over the years. Nevertheless, WIP managed to continue on a subsidized basis maintaining its conservation based ideals.

Most recently, a number of magazine articles in CPN and other publications have pointed out the ruthless destruction of natural habitats and the consequences that may follow. Television programs such as the famous Jacques Cousteau series and "Nature" have documented quite vividly the change in ocean life and the declining situation with tropical rainforests. The movie "Emerald Forest" portrayed the dying life of a tribe in Brazil that was forced to cope with massive environmental changes. Destruction of habitats will continue as underdeveloped countries use their easily obtained natural resources to pay their debts and supply the wealthy nations with low cost wood and meat products. It has been stated that for every quarterpound of hamburger obtained from cattle raised on former tropical forest (now grasslands), 15 square meters of virgin rain forest were destroyed. Rain forest soils are so poor that only a handful of cattle can be supported on an acre of the previously forested jungle.

This brings us to the point of this article. What can be done to change the tide? Long term, probably nothing; short term, something; I define long term as meaning centuries and short term decades. It has been established that retention of natural habitats is the only true way to save or even attempt to insure species survival. Therefore, all attempts should indirectly lead to this conclusion. Organizations such as the Nature Conservancy have begun to purchase natural areas and have a number of bogs under their jurisdiction. Our state, national forest and parks are supposedly protected, but government lands of any sort have limited protection due to the ease of access by citizens.

Since we are strictly interested in CP habitats, wouldn't it be prudent for CPN to be in a position to purchase bogs for the preservation of CP? To do so would require the financial aspects typical of most corporations, but it could be done if we all pull together. A little known fact is that because of the economics of printing, 2000 copies of CPN are printed for each issue. With the usual 700 to 800 members a year, over 1200 copies are stored each issue. If these 1200 copies were to be sold, CPN would be able to not only have more color photos and larger issues, but they could then consider paying for articles similar to other magazines. With more subscribers, land purchases could then be considered.

How can you help? If every member would get a new member each year, growth would be phenomenal. Is that too much to ask? CPN could give a free subscription to each member who gets five or ten new members. They could use this as a gift subscription or as a future subscription add-on. (Just an idea).

It would be nice for commercial CP specialty nurseries to purchase bogs and retain them as natural preserves or use them for plant production. Unfortunately, rare plants such as CP have a real restricted market appeal and that means limited sales. That is part of the reason why garden centers only stock one or two varieties of carnivores. It is only through the acquisition of new customers can CP firms stay in business. With this limited appeal, it is not economical for CP firms to stock all varieties of plants. Collectors will trade among themselves anyway to get something new. They will only use the commercial nursery when something new, different or rare is offered and that is getting exceedingly difficult today because of the wide assortment of plants that have been offered over the years (200+ by WIP alone since 1976).

Another fact needs to be presented. While CP interest is growing around the world, the US market is declining. This is not just my viewpoint but of others in the commercial trade. In addition, CP collectors are used to buying plants for a few dollars and have not accepted the true costs of growing rare plants on a commercial basis.

The problem is that most CP operations are run as "hobby businesses" and a side income for the operator. Consequently, profit and loss is of little importance. Because of the hobby nature of the nurseries, they are not able to provide financial assistance to protect natural habitats. However, there is something they and others can do. They could grow plants and replant natural habitats or increase the plant's range by planting them in areas that could support them. Unfortunately, our governmental agencies who have been created to protect the flora seem to be more interested in protecting their jobs by limiting plant colonies to their present locations. For instance, it would be easy for us living in the southeast to repopulate *S. oreophila* habitats that have been known in the past with our surplus plants. Growing 10,000 *S. oreophila* for transplanting is easy, yet we are stymied in our efforts. I would not recommend placing any plants on private lands unless you own them. Ideally, it might be best to use the US Forest Service, or state/national forest for "dumping grounds" but efforts to do so have been met with negative results. I have to agree with Faith Campbell of the National Resources Defense Council that the Federal Government is not really interested in saving restricted habitat plants such as CP. We, as avid plant collectors, have to pull together and do it on our own. So on to the next means of protection.

The last means of protecting the plants is the direct approach. That is for the private citizen to purchase natural habitats and act as a protector. This can be expensive, but it is effective. I have purchased a rather large bog myself and know of a few concerned collectors who have done likewise. Between us, we have diversified habitats that if retained will put off habitat destruction during our lifetime. Perhaps these new protected areas will be confiscated by the government under eminent domain powers because of future rarity of certain CP's. They say natural areas are being destroyed in the southeastern coastal areas (I have witnessed a remarkable change in only ten years), fifty years hence one may have difficulty in finding any plants.

Sarracenia drawing by Ron Fleming

A Second Record of Rats as Prey in Nepenthes Rajah

A. Phillipps, P.O. Box 10960
88810 Kota Kinabalu, Sabah, Malaysia

Many publications on pitcher-plants have repeated reports of frogs, birds and even mammals trapped by the plants for food, in addition to their normal insectivorous diet. However, few of these reports have been, or can be verified, and there are few published records. Until now the only authentic report of trapped mammals appeared to be that of Spenser St. John, in 1862 in his "Life in the Forests of the Far East." Here he reports on a visit to Kinabalu, saying *"Mr. Low, while wondering in search of flowers, came upon.... (a pitcher of Nepenthes rajah) in which was a drowned rat."*

For a long time, in the absence of other records, it seemed possible that this report might have been the result of a joke being played on Low and St. John by their Dusun guides, but a visit to a *Nepenthes rajah* area in the Kinabalu Park in April 1987 proved me wrong.

Betsy Andrews and I visited the site in April to collect the larvae of insects breeding in the water-filled pitchers for a Sabah Parks research project. To our surprise, we found not just one, but two drowned rats in two separate pitchers of *Nepenthes rajah!* The corpses, floating on top of the liquid in the pitchers were quite fresh and are now stored as specimens at the Kinabalu Park Headquarters.

Unfortunately, both the rats proved to be juveniles, and it was not possible to identify them below the genus *Rattus.*

How would the rats have got trapped in the first place? We visited the area at the end of a drought period of several months, and the site was very dried up. Though a small stream flowed down the valley below the site, there was no other source of liquid at the site itself. The rats therefore, were probably in search of water, and made the fatal mistake of climbing into the *N. rajah* pitchers to obtain it. Possibly, they were also sick and weakened, thus being easily prevented from climbing out again by the very slippery rim of the pitchers and strong, sharply pointed peristome.

Acknowledgements

I should like to thank R. Steubing for trying to identify the rats; and the Sabah Parks for having given me the opportunity to visit the *Nepenthes rajah* area.

References

St. John, Spenser. 1862. Life in the Forests of the Far East. Oxford University Press reprint 1974.

Nepenthes drawing by Ron Fleming

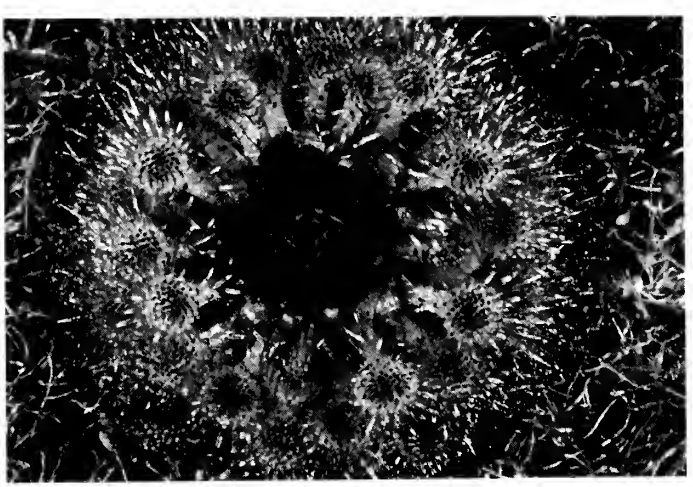
A Summary of WIP's Past & Future Directives

By Bob Hanrahan
P.O. Box 70513, Marietta, GA 30007, USA

The original operational guidelines for WIP highly stressed the production of diverse varieties of CP in wholesale quantities. The reason was to get as many species and hybrids as possible into circulation as a means of preservation by location diversity. A total commitment was made to acquire and develop new varieties for distribution through direct response retailing and to provide these plants to other nurseries on a wholesale basis. In a seven year period, over 200 different varieties of carnivores were made available to our customers. Many of the plants that you have in your collection today were first made available to hobbyists through these earlier efforts. The program of providing new plants to collectors was greatly assisted by a number of collectors who volunteered their rare plants for the sole purpose of intensified propagation. They can now take pride in knowing that many of their original plants have been used to establish a then "rare plant" into a common variety today. These dedicated collectors and their plants are too numerous to list, but their efforts have not gone unnoticed.

It is not my intent to make this sound like an epitaph for WIP, but as a means of conveying my thoughts over the years. I would like to point out that WIP will be changing its objectives for its second decade. Simply put, we are not going to invest the majority of our time looking for new varieties of plants to offer today's collectors. We will produce fewer varieties of plants and offer less. Believe it or not, the hobby has matured. There are a large number of companies who specialize in CP. They offer a wide selection of plants and their prices are very reasonable. Most important, they grow their plants on a commercial basis rather than pull them from the field. They are world-wide and conservation based. It would be counterproductive to compete with them for all companies would suffer with less sales that in the end would put some out of business. Each has a niche to fill and can foster the appeal of carnivores to their clientele.

Please see **SUMMARY** *on page 57*



D. nitidula setting gemmae. Photo by Jerome Wexler.

SUMMARY *continued from page 56*

To be truthful, the declining interest here in the USA has troubled me. To be strong in our conservation programs, we need a strong Society. Unless there is a philantropist who wants to donate mega-funds to us, we will need a large number of dedicated collectors to have an impact on long-term conservation. WIP will spend the next decade in bringing more people into the hobby. To do so will require a massive wholesale effort in growing the best possible plants and making them available to nurseries around the country. Specifically, the ever popular *Dionaea, Sarracenia* and *Drosera* varieties will be produced in tremendous numbers to decrease individual plant production costs. I will use my professional production engineering background to develop the most effective and efficient means to produce these plants. WIP will develop new *Sarracenia* hybrids that will exemplify the best of the genus. They will be marketed as attractive low priced plants comparable to African violets and other mass produced houseplants. New packaging will be developed to enhance the plants during display. Informative and thorough culture instructions will be provided with each plant to assist the purchaser with their new acquisition. Nothing will be left undone.

We will maintain a strong and growing presence in mail order sales because it is a practical way for the general public to get started in CP growing/collecting. We will offer only the most spectacular of each genus and have them available at the lowest practical price. It will now be up to you to go after that really rare and difficult to obtain and grow species. It will not be easy, but you will benefit greatly from the efforts and will surely take extra care when the plant you are seeking finally arrives. You will make contact with a number of other growers and that is precisely the true meaning of our hobby as communicated through CPN, "to disseminate information on CP culture and preservation." WIP encourages collector to collector trading and exchange of information. It is the preferred way to gain specific information about plant culture and to add new material to your collection.

The bottom line is, WIP is advancing to a new level in evolution. What more can I say?

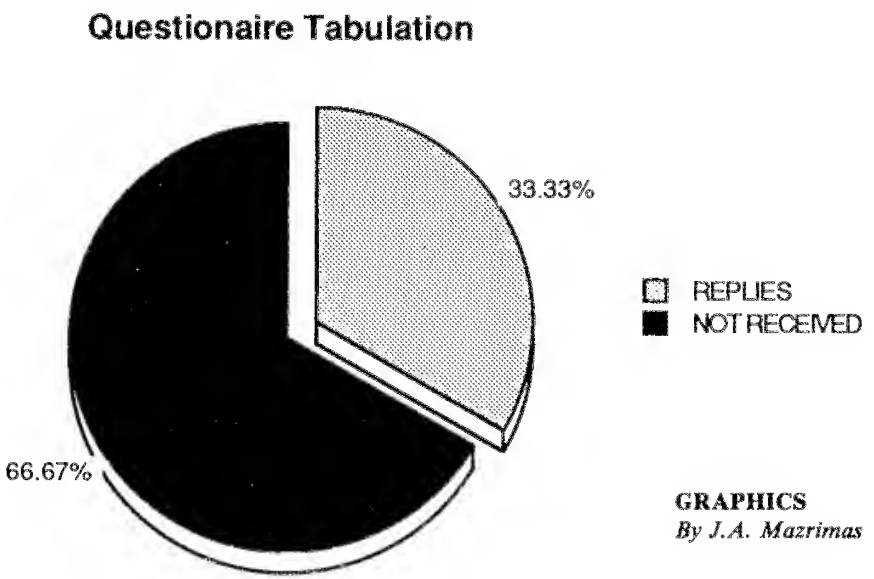
Drosera regia growing in a one gallon container at the Northern California CP meeting. See News & Views page 37. Photo by J.A. Mazrimas.

CPN Reader Survey Results

By Donald Schnell

Our CPN reader survey was sent out with the September, 1987 issue which, unfortunately, was not received by subscribers until December. There were 777 questionnaires mailed and we received 259 replies by the last week in January when we began tabulation, a return rate of 33%. Having expected no more than 10-15% on this sort of survey, this was excellent.

You will recall that the survey consisted of ten questions which required written answers rather than a checkoff style of approach. This allowed greater freedom for the reader to express his or her opinion on many things. Indeed, many respondents wrote on the back of questionnaires and even included additional sheets of paper. By reading through each survey sheet, one can pick up on many ideas that the writer is trying to convey.



GRAPHICS
By J.A. Mazrimas

This survey report will probably take two or more issues to be printed completely since we want to devote space to our regular topics as well. I will summarize results as best as possible question by question below. After the question number will be a brief phrase to help you recall the topic of the question, then the results, and then some comments. Some readers with their calculators handy will wonder why the figures do not add up in all cases. This is due to several reasons, primarily not every respondent answering all of the questions on their copy of the survey, or not answering all parts of the question, or providing multiple answers.

The survey sheets will not be destroyed at this point. I have gone through them and they will be provided for the other three co-editors to read. As I said above, reading the responses of any one person communicates some factors that cannot be quantified but are still important.

We thank those who did respond. Our job as co-editors is not to provide a salable item as is the case with most popular magazines. We see our task as providing the opportunity for each of you who has an interest in carnivorous plants to convey something you want to say to all of us, or read something someone has to say to you and all the other subscribers.

The summary will now follow.

Question 1.

(Where you live)

NON-USA

Australia—9
Austria—3
Belgium—3
Canada—12
Czechoslovakia—1
Denmark—1
England—10
France—1
West Germany—12
Ireland—1
Israel—1
Netherlands—3
New Zealand—3
Rep. S. Africa—2
Sweden—1
Switzerland—7

USA

AK—1
AL—5
AR—1
AZ—3
CA—37
CT—4
DC—1
FL—6
GA—3
HI—2
ID—1
IN—1
IL—5
KY—3
LA—4
MA—3
MD—2
ME—1
MI—2
MN—2
MO—3
NC—3
ND—1
NH—2
NJ—4
NM—1
NY—21
OH—7
OK—1
OR—3
PA—9
SC—2
TN—3
TX—13
UT—2
VA—9
WA—4
WI—2
WV—2
NOS—9

Comment—

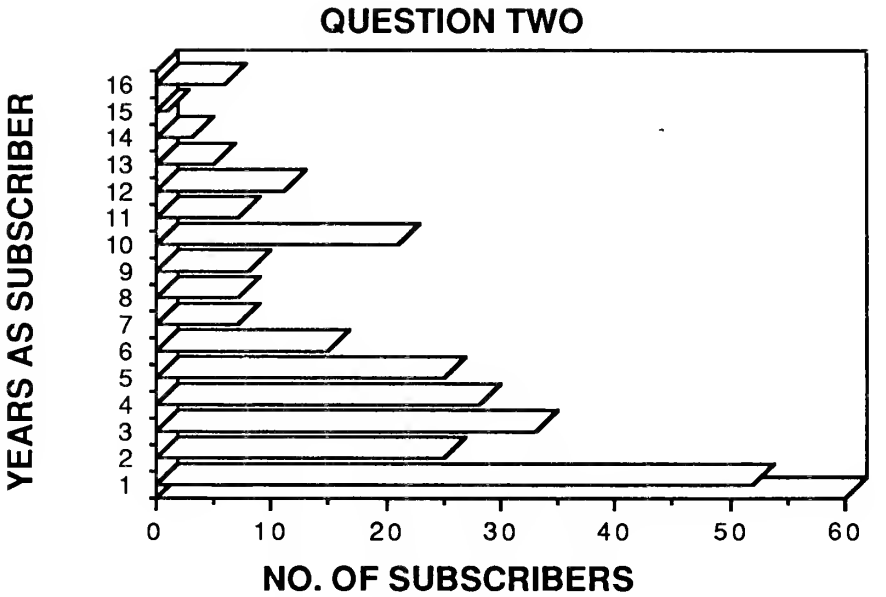
As you can see, the 259 respondents are pretty well spread among all countries and States of CPN circulation. There were several "not otherwise specified" (NOS) in the US. However, the spread of respondent locations does not imply that bias is completely absent since those who did take the trouble to complete and return the survey were undoubtedly motivated for whatever reason. Anyway, throughout these comments I cannot help making a pitch for articles—I think most of us would be interested in knowing how CP growing is going in Alaska or North Dakota, for instance!

Question 2.

(How long a subscriber)

Comment—

You will note that 63% (163) of those responding have been subscribers for five years or less, but there are a good number who have been with us for some time, including six who often said, "Since the beginning... ", which I thought had a ring to it. Many responders of relatively few years did volunteer that they had purchased back issues, so they were familiar with CPN's content through the years.



Question 3.

(Lapses in subscriptions—why, and why resubscribed)

Total responders who acknowledged subscription lapses—39 (15%)

Why did they lapse?

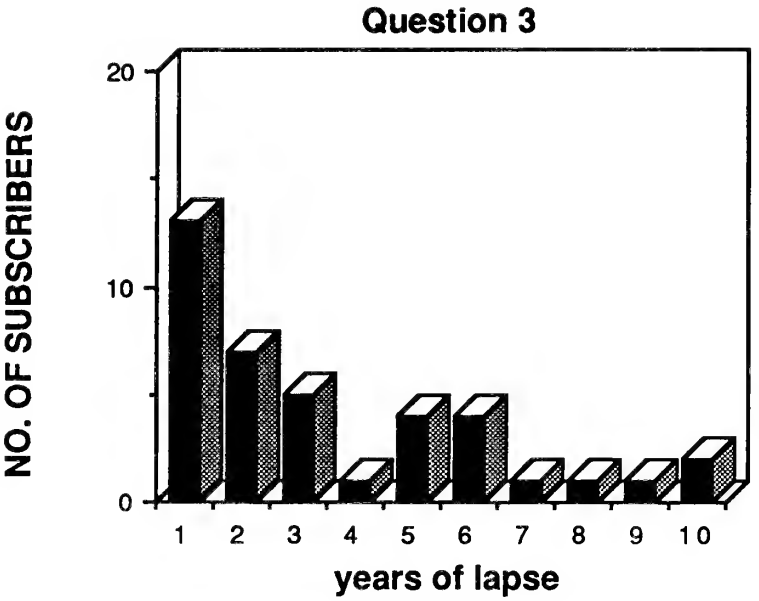
Oversight—5
No/lost renewal notice—6
Lost interest—3
School—3
No time—2
Illness—2
Other preoccupation—9
Lack growing facilities—3
Expense—1
Moving/travel—5

Why resubscribe?

Corrected oversight/no renewal notice—10
Rekindled interest—25
Facilities/expense less of problem now—4

Comment—

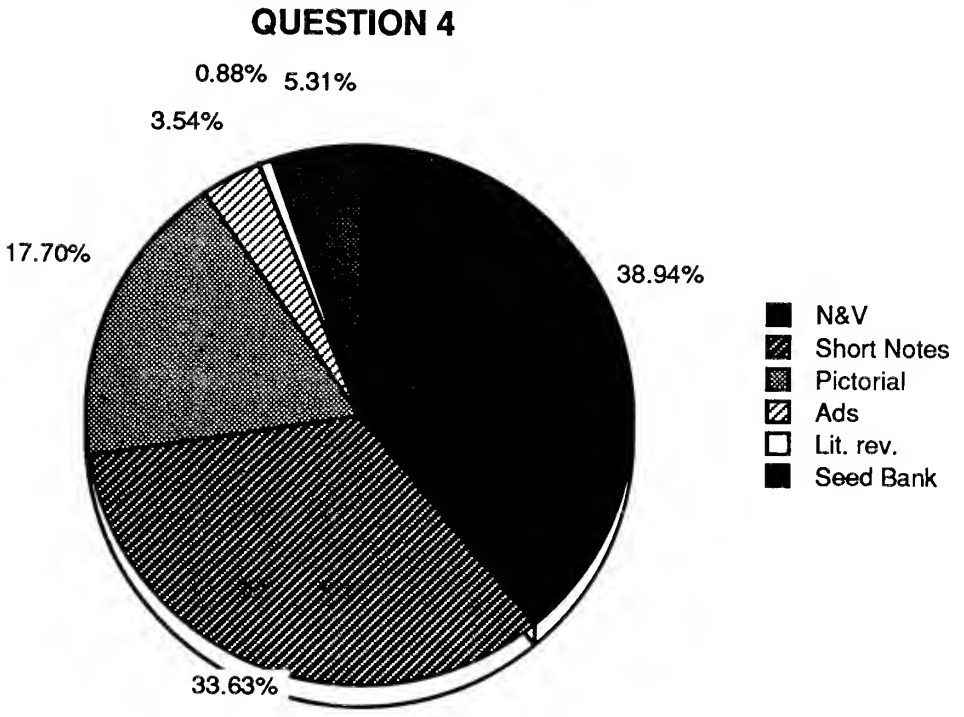
In the space for this question, several people complained about lateness of issues; several thought we had discontinued since they did not receive a renewal notice or last issue of year. Others complained about delays in answers to their queries about subscriptions. These are clearly problems for which there is no excuse, except possibly for what is out of our hands when issues are mailed. We recognize that we must endeavor to get the issues out on time in an expected time frame ("expected late" not allowed!), and we must have sufficient secretarial help to answer your questions about subscriptions. We notice that most of the lapses were short (three years or less), and we welcome all of you back.



Question 4.

(Submitted material for CPN? Categories?)

Seventy-five (29%) of those who responded to the questionnaire had submitted material to CPN. Eighteen others said they had not yet but intended to do so.



Comment—

This is actually a pretty good percentage of reader submissions and tends to confirm CPN as a mutual communication. However, there are a good many of you who need to get busy with those intentions and share something with us.

Question 5.

(Cost vs. quality—willing to accept less elaborate publication?)

This was one of those questions where a "no" answer meant that readers preferred the higher quality of CPN production rather than accept less. 93% of those responding indicated preference for the higher quality presentation. Some of the written-in comments concerned problems with overseas currency exchange, possible use of two grades of paper in an issue to cut costs (pictorial) on glossy, text on non-glossy), willingness to pay more to keep quality up, could not understand how we put out such a high quality publication for the money (comment included an editor of a similar publication), and willingness to accept more advertising.

Comment—

The tone of some of the written-in comments seemed to be one of concern that we might be seriously considering a lesser production. At this time there are no plans to reduce the quality of CPN. We have been able to increase it over the years through seed bank sales and recent advertising which the readers do not appear to object to and in fact often seem to want as indicated by other comments in the questionnaires. We appreciate your vote of confidence and will try to hold the quality and the subscription price.

To be continued

CP Around the World

Cephalotus and *Dionaea* in bud at the Paris Botanical Garden. Photo by Leo Song.

Coming in September

- Survey Results continued
- Carnivores in Micronesia (Postponed from June, 1988)
- The Electromechanical Mechanism of Trap Closure in *Dionaea muscipula*

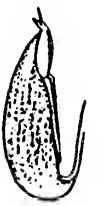
----> Remember, keep those articles coming. We depend on your input for CPN.

Utricularia floridana
Drawing by Ron Fleming

NEPENTHES

Cedar Ridge Nurseries

RD 1, Cedar Ridge Road
Allison Park, PA 15101



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